

## Rationing or Rationalizing Children's Medical Care: Comparison of a Medicaid HMO with Fee-for-Service Care

### ABSTRACT

**Objectives.** This paper examines how medical care obtained by children enrolled in a Medicaid health maintenance organization (HMO) differs from that obtained by similar children who receive care from fee-for-service Medicaid providers.

**Methods.** In a randomized trial, some Medicaid households were assigned to remain in a traditional fee-for-service arrangement and others were randomly selected to join a Medicaid prepaid plan (an HMO). Participating households recorded data on children's health status and use of medical care.

**Results.** The prepaid plan members and the fee-for-service recipients received equivalent numbers of checkup visits, but the children in the prepaid plan made significantly fewer acute care visits. This plan appeared to target its services to children with the greatest health care needs. However, the content of health visits in the two systems did not differ, nor did prepaid and fee-for-service enrollees use the emergency room differently.

**Conclusions.** It is possible to design a Medicaid HMO that achieves financial savings without reducing services to the most vulnerable patients. However, these findings alone do not provide a basis for widespread policy change in the direction of Medicaid HMOs. Further research is needed to establish whether the children treated in the HMO differed in health outcomes from those treated by fee-for-service care. (*Am J Public Health.* 1994;84:899-904)

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### Introduction

In recent years, policymakers and the research community have been discussing structural reforms for the Medicaid program that would control costs without creating further access barriers to patients. Enrolling Medicaid beneficiaries in health maintenance organizations (HMOs) instead of paying for their care on a fee-for-service basis is one of the most common proposals. However, it is important to determine whether the HMO's rationing of care further reduces access to needed services, or whether HMOs reduce costs by "rationalizing" service delivery to provide care for those with greatest needs while eliminating unnecessary services.

Given the considerable policy interest in HMOs, the Robert Wood Johnson Foundation, under its Program for Prepaid Managed Health Care, funded 13 demonstration projects in 1984 to expand the use of case management and capitation within the Medicaid population in 10 states across the country. The purpose of these experiments was to study the consequences of substituting HMO-type plans for traditional fee-for-service arrangements in the Medicaid program. The Health Care Financing Administration and the National Governors' Association joined the Robert Wood Johnson Foundation in sponsoring the RAND Corporation to evaluate these programs. This paper, part of the evaluation, reports data on children's use of outpatient care from one of the experimental sites.

### Fee-for-Service Medicaid vs HMOs

The constraints and incentives that operate in fee-for-service Medicaid programs can generate inappropriate patterns of care for enrollees. One problem

is that low Medicaid reimbursement levels discourage doctors from treating Medicaid patients, so many enrollees have limited or no access to private physician care. Consequently, many Medicaid patients seek care in hospital emergency rooms.<sup>1-4</sup> However, hospital emergency rooms are inappropriate sources of routine care because they provide episodic, high-cost services. Children who use such facilities as a regular place of care may not receive routine checkups and preventive care. Further, they may not receive *timely* care for incipient problems that would be noted and possibly treated during a checkup by a personal physician. Work by Kasper confirms that young children get more health care when they have a regular provider and not just a regular place of care.<sup>5</sup> HMOs have the potential to move the routine care of Medicaid beneficiaries out of hospital emergency rooms and into private physicians' offices, health centers, or outpatient clinics.

A second problem is that fee-for-service systems may induce excessive visits to private physicians while still not guaranteeing that patients receive all the medical care they need. When physicians are paid only for actual patient visits (and not, e.g., for telephone consultations), they may try to achieve adequate total reimbursement by encouraging multiple short visits for

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simple problems. In contrast, HMOs and other providers under capitated payment systems seek to offer care in the most cost-effective ways, which may mean replacing patient visits with telephone consultations or using fewer visits to treat a problem. If this is in fact the outcome, using HMOs for Medicaid clients could improve care and reduce unnecessary use. However, prepaid plans present incentives to reduce use generally, which may discourage medically necessary patient visits and lead to underprovision of needed services.

### *Experimental Reforms in Medicaid*

Policy interest in Medicaid HMOs has been translated into legislative action on several occasions. Section 2178 of the Omnibus Budget Reconciliation Act of 1981 broadened states' opportunities to contract with existing HMOs for Medicaid services, while section 1915 invited states to experiment with both new forms of prepaid care and new forms of case management for Medicaid enrollees (under waivers from the existing Medicaid legislation).

Programs established under section 1915 were of particular interest to the policy research community. Many of these programs were included in the Medicaid Competition Demonstration Project, a multisite research project to assess opportunities for Medicaid reform; findings from the project provide the backdrop for our findings reported below.

A quasi-experimental evaluation of programs in Monterey and Santa Barbara, Calif, and in Kansas City, Mo (which were all "mandatory"—i.e., beneficiaries did not have the option of remaining in the fee-for-service system), and of a voluntary program in New Jersey, found strong and pervasive effects of gatekeeping mechanisms on the likelihood of an emergency room visit. In all four programs, the gatekeeper (an individual physician or primary care organization) was required to provide all primary care. Prior authorization by the gatekeeper was required before enrollees could receive nonurgent emergency room care, inpatient care, or services from other physicians. The study compared use of the emergency room among stratified random samples of Medicaid beneficiaries drawn from the experimental counties and nearby comparison counties. Much smaller proportions of both children and adults used emergency room services at least once in the experimental sites. However, numbers of emergency room visits for persons with

at least one such visit were less substantially affected by the plans.<sup>6</sup>

Bonham and Barber examined the effect of a mandatory HMO Medicaid program on usage through in-depth interviews with randomly chosen Medicaid recipients, both prior to the start of the program and 1 year into it.<sup>7</sup> They found a 40% reduction in (self-reported) use of hospital emergency rooms, apparently owing to less use of the facilities for nonurgent care. There was no change, however, in the rate of hospital inpatient stays, ambulatory care, or prescribed drugs.

Two of the nine programs for which there are published estimates of program effects failed to reduce emergency room use, in each case for quite specific and readily identifiable reasons. In one program, pediatric emergency room use had been relatively low at the outset (i.e., under the fee-for-service system), so there was not a lot of room for improvement. In addition, some of the emergency room use was unapproved by the case manager and consequently did not have to be paid for by Medicaid.<sup>8</sup> The other plan that failed to change patterns of emergency room use was hospital based, so the hospital may not have faced strong financial incentives to shift care from the emergency room to the HMO clinic because it ran both.<sup>9</sup>

Most evaluations of non-Medicaid HMOs have found that HMOs increase the number of outpatient visits relative to fee-for-service care.<sup>10-12</sup> This is because HMO patients face minimal or no cost sharing while fee-for-service patients must pay at least part of the cost for outpatient visits. For Medicaid patients, the situation differs. Neither the HMO nor fee-for-service Medicaid requires patient cost sharing. Thus, if Medicaid patients use more visits in HMOs, this would reflect improved physical access rather than greater affordability.

HMOs may not provide an ideal alternative for Medicaid patients since studies suggest that low-income patients may not fare as well in HMOs as middle-income enrollees. Ware et al. show that, in a randomized trial, low-income adults with preexisting health problems reported more serious health problems and more bed days per year when they were assigned to an HMO rather than to fee-for-service care.<sup>13</sup> Although a study of children in the same HMO assignment revealed no significant negative health effects for those of either low or middle income,<sup>14</sup> the Ware finding

suggests the importance of examining this issue for Medicaid HMO enrollment.

The Children's Medicaid Program in New York compared use of services for children treated in one of three systems: (1) traditional fee-for-service Medicaid; (2) a fee-for-service Medicaid group with case management and augmented provider payments; and (3) a capitated, case-managed traditional HMO group with risk sharing for referred services. In their evaluation of this system, Hohlen et al. report that children in the capitated system received at least as much care as regular Medicaid children through the combination of physician office and outpatient clinic visits.<sup>15</sup>

While these studies suggest quite strongly that HMOs reduce emergency room use and may under some circumstances increase preventive use, they still leave many questions unanswered. In particular, the studies do not indicate which types of emergency room use are constrained by gatekeeping systems (although Bonham and Barber<sup>7</sup> provide some data on this) and which types of patients are most inclined to change their behavior when they enter an HMO. It does not appear that the studies controlled for such confounding factors as overall health status and existing health problems. Nor do these studies reveal whether or how children's patterns of care seeking change when they shift from fee-for-service to HMO systems. For example, is more change seen in routine visits or in acute visits? The study reported in this paper begins to fill some of these gaps in knowledge.

Our investigation examines three possible benefits of HMOs over fee-for-service Medicaid: (1) that HMO enrollees use emergency rooms less because the HMO makes primary care services more available; (2) that patients in HMOs have more checkup visits (partly because office-based care is available to them); and (3) that because preventive care is available, patients make fewer acute care visits. We test these hypotheses for pediatric services only.

## **Methods**

### *Data*

The data used here are from a randomized clinical trial in which some Medicaid households were assigned to remain in a traditional fee-for-service arrangement, others were randomly selected to join a Medicaid HMO, and still

others self-selected into either fee-for-service or HMO care.

The study HMO was situated in a hospital that was the primary Medicaid health provider for the area. Patients' access to services was better under the HMO than under fee-for-service Medicaid because patients had a case manager and could make appointments for specific times rather than being scheduled for 3-hour "block appointments."

Focusing exclusively on use of care by children, this investigation uses three types of data: characteristics of children and their families (obtained from baseline interviews), Medicaid eligibility and health plan enrollment data (obtained from administrative records), and use of care in a given 2-month period (recorded in diaries administered at baseline and 2 and 4 months thereafter). The use data come from mothers' diary reports of their children's health care use. The diaries are relied upon because, unlike the claims files, they distinguish well care visits from acute care visits. The 1867 children's diaries available for this analysis cover children aged 0 to 14.

The sampling frame was constructed from Medicaid eligibility files, including only those families eligible for Medicaid by virtue of eligibility for Aid to Families with Dependent Children. From the set of eligible families who currently received care in the fee-for-service Medicaid system, two subsamples were drawn. One was labeled the random assignment group and the other was the self-select group. Families in the first group were asked to agree to be randomly assigned to either receive their care in an HMO or continue to receive fee-for-service care. Thus, these families were comparable in that they all agreed, in principle, to enroll in an HMO if they were randomly assigned to do so. The actual plan assignment was not disclosed to random assignment families until after they had agreed to participate in the study. To determine whether families who agreed to randomization differed systematically from the average family enrolled in Medicaid, another sample of families who had fee-for-service Medicaid was selected and asked to enroll in the study but was not asked to agree to randomization (the second subsample). A self-selected HMO sample was chosen from the families with at least one member already in the study HMO plan at the time of the baseline interview.

Families that could not be located, either because their Medicaid records listed post office boxes rather than residential addresses or for other reasons, and

**TABLE 1—Outcome Measures, Demographic Characteristics, and Plan Status Variables**

	Mean	SD
<b>Dependent variables</b>		
Percentage with checkup visit	24.7	0.43
Percentage with acute care visit	18.7	0.39
Percentage with emergency room visit, given any visit	12.7	0.33
<b>Independent variables</b>		
Child's age, y	6.2	3.74
Plan status, %		
Enrollees in HMO plan	51.0	0.50
Randomly assigned	53.7	0.50
In HMO plan and randomly assigned	21.1	0.41
Questionnaire timing, %		
Summer (April to September)	32.5	0.47
First wave	21.0	0.41
Second wave	66.5	0.47
Third wave	12.5	0.33
White (i.e., non-Hispanic, non-Black), %	13.0	0.34
Number of health problems reported per child at start of experiment		
Allergies	0.20	0.49
Serious health problems	0.01	0.09
Other health problems	0.30	0.64

Note. No. of diaries = 1867; no. of individual children = 1685.

families that spoke little or no English were excluded from the study. Any family belonging to a prepaid plan other than the study HMO was also ineligible.

Although families were informed that their enrollment in the study was voluntary, participation rates were high. Of the eligible sample, 80% (4433 of 5542 individuals) agreed to participate and 75% were actually enrolled. That is, only 268 people refused to participate after the initial informed consent. Families who did not enroll were not assigned to another group. There were no significant differences in average prior monthly Medicaid use between those whom the study located and those who were not located, between those who were eligible for enrollment and those who were ineligible, or between those who refused informed consent and those who accepted it. Neither did these groups differ significantly in terms of family size, average age, or percentage female, with the one exception that family size was larger in the eligible group (3.7) than in the ineligible group (3.4). Finally, the refusal rate was as low among random assignment families as it was among the self-select families.

### Models

Three different dependent variables were examined, each one describing a sample child's use of health services

during the 2-month period covered by the diary. These variables are whether the child (1) had a "regular" or checkup visit, (2) had a visit for acute care, and (3) visited an emergency room. There were up to three diaries for each child, each covering a different 2-month period. Analyses include a variance component correction to control for correlation among observations for a particular child. Logistic regressions were used throughout. Emergency room visits were modeled as conditional on having made any visit. The independent variables were selected based on previous studies of child health. Both dependent and independent variables are listed in Table 1.

In addition to plan status (in HMO or fee-for-service care), the explanatory variables include sex, race/ethnicity, age and age squared, and number of health problems. The distributions of most variables are unremarkable: there are a few more boys than girls, the average age of the children is 6, and relatively few existing health problems are reported (on average, about one condition in every two children).

About 13% of the children were described by their parents as White, 80% as Black, and about 5% as Hispanic. Because a large but unidentifiable number of Caribbeans (some of whom might have been classified as Hispanic) reported

**TABLE 2—Determinants of Checkup and Acute Care Visits by Children Enrolled in a Medicaid HMO or in Medicaid Fee-for-Service Care: Odds Ratios and 95% Confidence Intervals (CIs)**

	Type of Visit			
	Checkup <sup>a</sup>	Acute	Checkup <sup>b</sup>	Acute
	Odds Ratio (95% CI)	Odds Ratio (95% CI)	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Enrolled in HMO plan	1.00 (0.72, 1.38)	0.72 (0.52, 1.01)	...	...
Enrolled in HMO plan, had no preexisting health problems			0.97 (0.69, 1.36)	0.65 (0.44, 0.95)
Enrolled in HMO plan, had at least one preexisting health problem	...	...	1.01 (0.74, 1.37)	1.08 (0.83, 1.39)
Randomly assigned	0.95 (0.67, 1.35)	0.86 (0.60, 1.23)	0.95 (0.67, 1.34)	0.93 (0.65, 1.33)
Female	0.90 (0.70, 1.14)	1.02 (0.79, 1.33)	0.90 (0.70, 1.14)	1.03 (0.79, 1.33)
White	1.39 (0.94, 2.05)	1.18 (0.73, 1.90)	1.39 (0.94, 2.05)	1.17 (0.73, 1.90)
Child's age in years	0.72 (0.63, 0.83)	0.69 (0.60, 0.79)	0.72 (0.63, 0.83)	0.69 (0.60, 0.79)
Child's age squared	1.02 (1.01, 1.03)	1.02 (1.01, 1.03)	1.02 (1.01, 1.02)	1.02 (1.01, 1.03)
Numbers of allergies listed for child at start of experiment	1.06 (0.80, 1.40)	1.36 (1.06, 1.75)	1.05 (0.73, 1.51)	1.20 (0.89, 1.62)
Number of serious health problems listed at start of experiment	3.02 (1.09, 8.36)	2.13 (0.63, 7.28)	3.03 (1.11, 8.30)	2.40 (0.84, 6.86)
Number of other health problems listed at start of experiment	1.19 (0.91, 1.56)	1.57 (1.21, 2.04)	1.18 (0.88, 1.58)	1.38 (1.09, 1.74)
Diary is from second wave	0.81 (0.55, 1.20)	0.58 (0.39, 0.88)	0.81 (0.55, 1.20)	0.56 (0.37, 0.83)
Diary is from third wave	0.64 (0.37, 1.11)	0.50 (0.27, 0.92)	0.64 (0.37, 1.12)	0.49 (0.27, 0.91)
Diary describes April to September	1.28 (0.88, 1.85)	1.87 (1.26, 2.78)	1.27 (0.88, 1.85)	1.83 (1.23, 2.73)

<sup>a</sup>Columns 1 and 2 contrast all HMO enrollees with all fee-for-service enrollees.

<sup>b</sup>Columns 3 and 4 contrast HMO enrollees with chronic conditions and HMO enrollees without chronic conditions with fee-for-service enrollees.

themselves as Black, only White vs non-White children are contrasted in the models.

Analyses controlled for whether the child was randomly assigned or self-selected to his or her plan status (about equal numbers of diaries are from each group), whether the diary describes months from fall and winter (October to March) or from spring and summer (April to September), and which wave of data collection (first, second, or third) the diary is from. The self-select and random assignment groups were quite similar to each other in age, sex, ethnic composition, and rates of outpatient visits.

## Results

Odds ratios from logistic regression models are shown in Tables 2 and 3. Table

2 presents the simplest model of the determinants of checkup and acute care visits. Initial tests showed no significant differences in use between the self-select and random assignment groups within each plan status, as might be expected since participation rates were similar. Because the use of care within the HMO did not differ between those who self-selected the HMO and those who were assigned to the HMO, a single indicator was used for the two HMO groups. Similarly, there were no significant differences between the two fee-for-service groups, which were also combined into a single variable. Table 2 shows that children enrolled in an HMO have a lower probability of an acute care visit. Although the coefficient on HMO enrollment just fails to meet the standard 5% test for statistical significance ( $P = .056$ ),

**TABLE 3—Determinants of Emergency Room Visits by Children Who Used HMO or Fee-for-Service Medical Care: Odds Ratios and 95% Confidence Intervals (CIs)**

	Odds Ratio	95% CI
Enrolled in HMO plan	1.06	0.62, 1.80
Randomly assigned	1.17	0.65, 2.11
Female	1.07	0.69, 1.65
White	1.15	0.52, 2.58
Child's age in years	0.80	0.64, 1.01
Child's age squared	1.02	1.00, 1.04
Total number of health problems listed as start of experiment	1.13	0.92, 1.39
Diary is from second wave	0.50	0.25, 0.99
Diary is from third wave	0.39	0.13, 1.13
Diary describes April to September	1.82	1.04, 3.20

it is large enough to indicate that HMO enrollment triggers a real and important reduction in acute care visits. (In fact, the coefficient on HMO enrollment for acute care visits was negative and significant [ $P = .020$ ] before we corrected the regression standard errors for covariance between repeated observations from the same child and from the same household. With this covariance correction, the coefficient estimate did not change but the estimated standard error became larger; consequently, the statistical significance just dipped below the 5% threshold [ $P = .056$ ].) The predicted rate of acute care visits for plan children was only 14% while for fee-for-service children it was 23% (controlling for all other factors in the model). In contrast, on checkup visits, plan members and fee-for-service children were indistinguishable. Although possible reasons for these differences are discussed in detail in the Discussion section below, three obvious possibilities are noted here: (1) the HMO may provide better, more complete care at the time of the checkup, so fewer acute care visits are necessary; (2) the HMO may reduce unnecessary use among basically healthy children but may serve children with serious or frequent health problems at an

appropriately higher level; or (3) the HMO may respond to the incentives inherent in any capitation scheme and may underprovide needed services (e.g., by making it difficult to come in for acute care). This third explanation is not supported by the data in Table 2, however. If the HMO were withholding services, presumably the effect should also appear in rates of checkup visits, which it does not.

Child age has the expected effect on medical visits. The probability of any type of visit falls at a decreasing rate with age, bottoming out around age 10. Although boys typically are frailer than girls, sex is not a significant predictor of either acute or checkup visits when prior health status and age are controlled.

Children's prior health problems have different effects on acute care and checkup visits. A child with a major disabling condition (blindness, diabetes, cerebral palsy, mental retardation, cancer, missing limbs) was significantly more likely than a nondisabled child to visit a health provider for routine care (probability of a checkup = 41%), while a child with an allergy (eczema, asthma, hay fever, other skin and respiratory allergies) or "other" (nondisabling) condition had an above-average likelihood of an acute care visit.

Thirty-one percent of Whites but only 19% of non-Whites had a recent checkup visit. Although this variable is significant at only the 10% level, in the model reported here it had a significance level of .046 before correction for correlated observations.

The final variables that were considered are aspects of the survey administration: method of assignment and timing of the diary. The random assignment groups did not differ significantly from the self-selected groups in terms of use. The season of the year, however, did affect use. This site is in Florida, where the summer months bring significantly more acute care problems, presumably for ailments associated with exposure to sun and humidity and with moving between air conditioning and extreme heat. The coefficients on wave 2 and wave 3 show respondents reporting fewer acute care visits in later waves of the survey, independently of the season. This pattern, which cannot be readily explained, is consistent with the usage patterns observed in the claims data.

Table 2 indicates that the structure or practices of the HMO led to fewer acute care visits among enrolled children. Several hypotheses were tested that might explain this effect. The first was that the HMO might succeed in reducing care

among children with few needs but might still see children with chronic problems at the same rate as under fee-for-service care. The fourth column in Table 2 supports this theory. The decline in acute care visits is concentrated among children with no health problems identified at the start of the experiment; their probability of an acute care visit in the 2-month period covered by a diary is only 11.5%, compared with a 16.7% probability for equally healthy children in the fee-for-service system. Children with one or more problems at the outset of the study had equal acute care visit probabilities in the two systems. As the third column shows, the likelihood of a checkup visit was not affected by plan enrollment for either group.

The hypothesis that physicians might provide more comprehensive care during visits to the HMO was tested using data on the content of acute and well care visits (e.g., whether the child received a urine test, throat culture, etc.). However, *t* tests revealed no significant differences between visit content in the HMO and the fee-for-service systems. Although children in the plan were somewhat more likely to have a urine test during a preventive visit ( $P = .07$ ), they were somewhat less likely to receive a throat culture during an acute care visit ( $P = .09$ ). Five other comparisons showed no significant differences.

Finally, the study sought to determine if the HMO selectively reduced emergency room visits relative to fee-for-service use. Overall, 2.4% of children used the emergency room for a checkup in a 2-month period and 4.8% visited it for an acute problem. Viewed differently, nearly one quarter of all acute visits and 9% of all checkup visits occurred in the emergency room. To determine whether, among those who used medical services, HMO enrollees were less likely to use the emergency room, the model made the probability of any visit to the emergency room conditional on the child having had at least one checkup or acute visit. As Table 3 shows, there are no significant differences between HMO and fee-for-service enrollees in their use of the emergency room. More elaborate models, examining acute and checkup emergency room visits separately, also failed to reveal any significant determinants of use.

## Discussion

This paper has shown that an HMO reduced acute care visits for children on

Medicaid but did not reduce emergency room use. The deterrent effect of HMO membership on acute care visits is not found across the board for all children. On the contrary, it is concentrated in a particular group: children with no health problems at the start of the experiment. Thus, the HMO appears to be targeting its services to children with the greatest health care needs rather than curtailing services across the board.

The question remains: Why should healthy HMO plan members have fewer acute visits than fee-for-service children do? Earlier we suggested three possible reasons: the plan provides more complete care during each preventive visit, it reduces necessary acute care, or it reduces unnecessary visits. Data on the content of well care visits do not offer any support for the first hypothesis. Nor do they support the second explanation: that the HMO is deliberately making care inaccessible to patients. If this were the case, presumably we would observe a negative effect of plan enrollment on checkup visits. However, the reduction in visits is limited to acute care visits by the most healthy children, which suggests that the HMO is able to "rationalize" its delivery of services rather than to merely ration services across the board. The assignment of a case manager to the HMO patients may have helped them receive advice over the telephone without making a visit. Since we have no data on telephone consultations, we cannot confirm this hypothesis. In contrast to the findings in Ware et al.,<sup>13</sup> patients with preexisting health conditions apparently received as much care in the HMO as they did in the fee-for-service system.

Although visits to the emergency room accounted for nearly one quarter of all the Medicaid children's acute care visits, the HMO did not selectively reduce emergency room use. In contrast to most previous studies, we found that the proportion of all HMO pediatric visits that occurred in the emergency room did not differ significantly from the proportion for fee-for-service patients. This may be because the HMO was sponsored by and located in the hospital with a large emergency department serving Medicaid patients. Thus, as was the case in Hurley et al.,<sup>9</sup> this plan may have had little incentive to divert patients from emergency room use.

The finding that the HMO reduced overall use by targeting health care services to those with the greatest health needs is encouraging news for advocates of Medicaid HMOs since it suggests that, in this experiment, the HMO may have

reduced unnecessary use without reducing care for children who need it. However, we must conclude on a cautious note. First, our results are based on practice at a single HMO. Second, while we have no evidence that the HMO was not providing needed services, neither can we claim that the HMO was remedying all deficits in care in a population vulnerable to inadequate care. □

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